

## LIVERMORE LAB REPORT

A weekly review of scientific and technological achievements from Lawrence Livermore National Laboratory, Sept. 4-7, 2012

### GOVERNMENT TECHNOLOGY<sup>®</sup> SOLUTIONS FOR STATE AND LOCAL GOVERNMENT

#### SECRETS FROM A SINKING SHIP



**From left: historian Martin Morgan, ship's owner Gregg Bemis, marine engineer Ken Smith, LLNL's Randy Simpson, Lee Glascoe and Jon Maienschein.**

Lawrence Livermore recently starred in a National Geographic documentary about the sinking of the British passenger ship Lusitania during the early part of World War I. The ship sank in less than 20 minutes and nearly 2,000 people drowned.

The mystery, to this day not fully explained, arises from accounts from survivors, as well as the commander of the German U-boat, of a second, more powerful blast about 15 seconds after the initial torpedo explosion.

So the filmmakers took questions about why the ship went under so quickly to a team of experts at LLNL's High Explosives Applications Facility (HEAF).

The two-hour long program aired on the National Geographic channel on Friday, Aug. 31, at 9 p.m. Pacific time. It will be repeated periodically, and a [video excerpt is available on the Web](#).

To read more, go to [Government Technology](#).



### **Lawrence Livermore National Laboratory**

Research funded by the government at federal laboratories has been and can be a source of innovation for private industry, according to a report prepared by the Bay Area Council Economic Institute.

And the government should continue to fund national laboratories at current levels if it expects that innovation to continue.

The report noted that there is a long list of successful transfers of technology from the laboratories to the marketplace. In FY 2011, Lawrence Livermore was awarded 60 U.S. patents, filed 123 patent applications, and submitted 164 records of invention. It also signed six new Cooperative Research and Development Agreements (CRADAs) with industry partners and 24 new commercial licenses for LLNL-developed technologies and software.

Its commercial licensing program ranks at the top among national labs. Four companies (Cadence Design, Cepheid, Digital Globe and Rambus) founded by LLNL scientists now have a collective market value of more than \$8 billion.

To read more, go to [\*The Independent\*](#).



**Back row: Pierre Michel, Bob Kirkwood and Laurent Divol. Front row: George Kyrala, Debbie Callahan and Nathan Meezan (Additional recipient Ed Williams is missing from the photo.).**

Six high-energy laser researchers from the Laboratory and a seventh from Los Alamos National Laboratory (LANL) have won the American Physical Society's 2012 John Dawson Award for Excellence in Plasma Physics Research.

The team is being recognized for its work on what the APS describes as "a far-reaching discovery about laser-matter interaction, which has important implications for LLNL's National Ignition Facility (NIF)."

More specifically, the award is for "predicting and demonstrating the technique of laser scatter on self-generated plasma-optics gratings that enables generation and redirection of high-energy laser beams important for indirect drive inertial confinement fusion and high-power laser-matter interactions."

The members of the winning team are: Debra Ann Callahan; Laurent Divol; Robert Kirkwood; Edward Williams; Nathan Meezan; and Pierre Michel (all LLNL), as well as George Kyrala from LANL. They share \$5,000 in cash and a certificate, and will officially accept the award at the 54th Annual Meeting of the APS Division of Plasma Physics being held in Providence, RI, this October.

To read more, go to [Optics.org](http://Optics.org).



**An instrument used for breath sampling.**

Laboratory researchers are looking forward to an upcoming workshop where they can learn about near-term research trends that can yield the next generation of breath analysis sensor platforms.

The Laboratory, in collaboration with the University of California, Davis and the Canterbury Respiratory Research Group, will host the 2012 International Breath Analysis Meeting, Oct. 28-Nov. 1 at the Fairmont Sonoma Mission Inn in Sonoma, Calif. The event will address the technological advances in human breath analysis and diagnostics, along with associated data analysis methods and collection protocols.

"We envision that this workshop will provide an opportunity for participants to discuss their own projects, debate future directions of the field, and contemplate areas of research that deserve special attention in the field moving forward," says Matthias Frank, a co-chair of the event and a physicist in LLNL's Physical & Life Sciences Directorate.

Most of today's breath instruments are bulky and relatively slow, Frank said, indicating that many researchers would like to bring the latest advances in trace gas analysis and microfluidics to the field.

To read more, go to [Medical Xpress](#).

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LLNL applies and advances science and technology to help ensure national security and global stability. Through multi-disciplinary research and development, with particular expertise in high-energy-density physics, laser science, high-performance computing and science/engineering at the nanometer/subpicosecond scale, LLNL innovations improve security, meet energy and environmental needs and strengthen U.S. economic competitiveness. The Laboratory also partners with other research institutions, universities and industry to bring the full weight of the nation's science and technology community to bear on solving problems of national importance.

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